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WHAT IS CLAIMED IS:

1. A method of measuring pressure in a subterranean well, the method comprising the steps of:
 - 5 providing a pressure measurement apparatus including a generally tubular mandrel having a tube wrapped helically externally about the mandrel;
interconnecting the mandrel in a tubular string, a flow passage of the tubular string extending longitudinally through the mandrel;
connecting the tube to a fluid line extending to a remote location;
10 positioning the tubular string in the well;
displacing a predetermined fluid through the line and the tube; and
measuring pressure in the fluid at the remote location.
2. The method according to Claim 1, wherein the positioning step
15 further comprises positioning a longitudinal axis of the mandrel at a substantial deviation from vertical.
3. The method according to Claim 1, wherein the positioning step
20 further comprises orienting the mandrel in the well so that a flowpath through the tube extends in alternating at least partially vertical directions.
4. The method according to Claim 1, wherein the positioning step
further comprises orienting the mandrel in the well so that a longitudinal axis of the mandrel extends beyond horizontal.

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5. The method according to Claim 1, wherein in the positioning step, the mandrel is positioned in a portion of the well which extends beyond horizontal.

5 6. The method according to Claim 1, wherein the providing step further comprises providing a housing outwardly overlying the tube.

7. The method according to Claim 1, wherein in the providing step, the tube has a greater internal cross-sectional area than the fluid line.

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8. The method according to Claim 1, wherein in the displacing step, the predetermined fluid is a gas.

9. The method according to Claim 8, wherein in the displacing step,
15 the gas is helium.

10. The method according to Claim 8, wherein in the displacing step, the gas is nitrogen.

20 11. The method according to Claim 1, wherein in the displacing step, the predetermined fluid is a liquid.

12. The method according to Claim 11, wherein in the displacing step, the liquid is substantially silicone.

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13. The method according to Claim 1, wherein the displacing step further comprises displacing well fluid at least partially out of the tube.

14. The method according to Claim 1, wherein the measuring step further comprises admitting well fluid at least partially into the tube.

5 15. The method according to Claim 1, wherein the providing step further comprises providing a thermocouple wire within the tube.

16. The method according to Claim 1, wherein the providing step further comprises providing an optical fiber within the tube.

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17. The method according to Claim 1, further comprising the step of measuring temperature in the well using a thermocouple wire positioned within the tube.

15 18. The method according to Claim 1, further comprising the step of measuring temperature in the well using an optical fiber positioned within the tube.

20 19. The method according to Claim 1, further comprising the step of detecting a gas-liquid interface in the well using a thermocouple wire positioned within the tube.

25 20. The method according to Claim 1, further comprising the step of detecting a gas-liquid interface in the well using an optical fiber positioned within the tube.

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21. The method according to Claim 1, wherein in the measuring step, the tube is in fluid communication with the tubular string flow passage.

22. The method according to Claim 1, wherein in the measuring step,
5 the tube is in fluid communication with a wellbore of the well external to the tubular string.

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23. A method of measuring pressure in a subterranean well, the method comprising the steps of:

providing a pressure measurement apparatus including a fluid flowpath;

connecting the flowpath to a fluid line extending to a remote location;

5 positioning the apparatus in the well, so that the flowpath extends in alternating at least partially vertical directions;

displacing a predetermined fluid through the line and the flowpath; and

measuring pressure in the fluid at the remote location.

10 24. The method according to Claim 23, wherein the positioning step further comprises positioning a longitudinal axis of the apparatus at a substantial deviation from vertical.

15 25. The method according to Claim 23, wherein the positioning step further comprises positioning the apparatus so that the flowpath extends alternately upward and downward.

20 26. The method according to Claim 23, wherein the positioning step further comprises orienting the apparatus in the well so that a longitudinal axis of the apparatus extends beyond horizontal.

27. The method according to Claim 23, wherein in the positioning step, the apparatus is positioned in a portion of the well which extends beyond horizontal.

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28. The method according to Claim 23, wherein the providing step further comprises providing the flowpath formed in a tube of the apparatus.

29. The method according to Claim 23, wherein the providing step further comprises providing the flowpath formed in an internal chamber of the apparatus.

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30. The method according to Claim 23, wherein in the providing step, the flowpath has a greater cross-sectional area than an interior of the fluid line.

31. The method according to Claim 23, wherein in the displacing step,
10 the predetermined fluid is a gas.

32. The method according to Claim 31, wherein in the displacing step, the gas is helium.

33. The method according to Claim 31, wherein in the displacing step,
15 the gas is nitrogen.

34. The method according to Claim 23, wherein in the displacing step, the predetermined fluid is a liquid.

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35. The method according to Claim 34, wherein in the displacing step, the liquid is substantially silicone.

36. The method according to Claim 23, wherein the displacing step
25 further comprises displacing well fluid at least partially out of the flowpath.

37. The method according to Claim 23, wherein the measuring step further comprises admitting well fluid at least partially into the flowpath.

38. The method according to Claim 23, wherein the providing step
5 further comprises providing a thermocouple wire within the flowpath.

39. The method according to Claim 23, wherein the providing step further comprises providing an optical fiber within the flowpath.

10 40. The method according to Claim 23, further comprising the step of measuring temperature in the well using a thermocouple wire positioned within the flowpath.

15 41. The method according to Claim 23, further comprising the step of measuring temperature in the well using an optical fiber positioned within the flowpath.

20 42. The method according to Claim 23, further comprising the step of detecting a gas-liquid interface in the well using a thermocouple wire positioned within the flowpath.

43. The method according to Claim 23, further comprising the step of detecting a gas-liquid interface in the well using an optical fiber positioned within the flowpath.

44. The method according to Claim 23, wherein in the measuring step, the flowpath is in fluid communication with a flow passage of a tubular string positioned in the well, the apparatus being connected in the tubular string.

5 45. The method according to Claim 23, wherein in the measuring step, the flowpath is in fluid communication with a wellbore of the well external to a tubular string positioned in the well, the apparatus being connected in the tubular string.

10 46. The method according to Claim 23, wherein in the providing step, the flowpath is formed through a tube helically wrapped about a tubular mandrel, and further comprising the step of interconnecting the mandrel in a tubular string, so that a flow passage of the tubular string extends longitudinally through the mandrel.

15 47. The method according to Claim 23, wherein in the providing step, the flowpath is formed through a tube formed so that the tube repeatedly alternates direction.

20 48. The method according to Claim 23, wherein in the providing step, the flowpath is formed in a partitioned chamber.

 49. The method according to Claim 48, wherein in the providing step, the chamber is rotatably disposed relative to a tubular mandrel.

25 50. The method according to Claim 48, further comprising the steps of: interconnecting the apparatus in a tubular string; and

rotating the chamber relative to the tubular string in the well.

51. The method according to Claim 23, further comprising the steps of:

interconnecting the apparatus in a tubular string; and

5 rotating the tubular string in the well relative to a connection between the
line and the flowpath.

52. The method according to Claim 51, wherein the rotating step
further comprises maintaining a relative vertical orientation between the
10 connection and the chamber.

53. A system for measuring pressure in a subterranean well, the system comprising:

an apparatus interconnected in a tubular string in the well, the apparatus including a generally tubular mandrel, and a flowpath extending helically
5 externally about the mandrel, a flow passage of the tubular string extending longitudinally through the mandrel; and

a line connected to the flowpath and extending to a remote location, pressure applied to a predetermined fluid in the line at the remote location balancing pressure in well fluid admitted into the flowpath.

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54. The system according to Claim 53, wherein the flowpath is formed in a tube wrapped about the mandrel.

55. The system according to Claim 53, wherein the flowpath has a
15 greater cross-sectional area than an interior of the line.

56. The system according to Claim 53, wherein the apparatus is positioned in the well so that the flowpath extends in alternating at least partially vertical directions.

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57. The system according to Claim 53, wherein the apparatus is positioned in the well so that the flowpath extends alternately upward and downward.

25 58. The system according to Claim 53, wherein the apparatus is positioned in the well so that the flow passage in the mandrel extends at a substantial deviation from vertical.

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59. The system according to Claim 53, wherein the apparatus is positioned in the well so that a longitudinal axis of the mandrel extends beyond horizontal.

5 60. The system according to Claim 53, wherein the apparatus is positioned in a portion of the well which extends beyond horizontal.

61. The system according to Claim 53, wherein the apparatus further includes a housing outwardly overlying the flowpath.

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62. The system according to Claim 53, wherein the predetermined fluid is a gas.

63. The system according to Claim 62, wherein the gas is helium.

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64. The system according to Claim 62, wherein the gas is nitrogen.

65. The system according to Claim 53, wherein the predetermined fluid is a liquid.

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66. The system according to Claim 65, wherein the liquid is substantially silicone.

25 67. The system according to Claim 53, wherein the apparatus includes a thermocouple wire within the flowpath.

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68. The system according to Claim 53, wherein the apparatus includes an optical fiber within the flowpath.

69. The system according to Claim 53, wherein the flowpath is in fluid
5 communication with the tubular string flow passage.

70. The system according to Claim 53, wherein the flowpath is in fluid communication with a wellbore of the well external to the tubular string.

71. A system for measuring pressure in a subterranean well, the system comprising:

a pressure measurement apparatus including a fluid flowpath;

a fluid line connected to the flowpath and extending to a remote location;

5 the apparatus being positioned in the well, so that the flowpath extends alternately upward and downward; and

a predetermined fluid being displaced through the line and into the flowpath.

10 72. The system according to Claim 71, wherein the apparatus is positioned in the well so that a longitudinal axis of the apparatus is at a substantial deviation from vertical.

15 73. The system according to Claim 71, wherein the apparatus is positioned in the well so that the flowpath extends in alternating at least partially vertical directions.

20 74. The system according to Claim 71, wherein the apparatus is positioned in the well so that a longitudinal axis of the apparatus extends beyond horizontal.

75. The system according to Claim 71, wherein the apparatus is positioned in a portion of the well which extends beyond horizontal.

25 76. The system according to Claim 71, wherein the flowpath is formed in a tube of the apparatus.

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77. The system according to Claim 71, wherein the flowpath is formed in an internal chamber of the apparatus.

78. The system according to Claim 71, wherein the flowpath has a greater cross-sectional area than an interior of the fluid line.

79. The system according to Claim 71, wherein the predetermined fluid is a gas.

80. The system according to Claim 79, wherein the gas is helium.

81. The system according to Claim 79, wherein the gas is nitrogen.

82. The system according to Claim 71, wherein the predetermined fluid is a liquid.

83. The system according to Claim 82, wherein the liquid includes substantially silicone.

84. The system according to Claim 71, wherein the predetermined fluid displaces well fluid at least partially out of the flowpath.

85. The system according to Claim 71, wherein well fluid is admitted at least partially into the flowpath.

86. The system according to Claim 71, wherein the apparatus includes a thermocouple wire within the flowpath.

87. The system according to Claim 71, wherein the apparatus includes
5 an optical fiber within the flowpath.

88. The system according to Claim 71, wherein the apparatus detects a gas-liquid interface in the well using a thermocouple wire positioned within the flowpath.
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89. The system according to Claim 71, wherein the apparatus detects a gas-liquid interface in the well using an optical fiber positioned within the flowpath.

90. The system according to Claim 71, wherein the flowpath is in fluid communication with a flow passage of a tubular string positioned in the well, the apparatus being connected in the tubular string.
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91. The system according to Claim 71, wherein the flowpath is in fluid communication with a wellbore of the well external to a tubular string positioned in the well, the apparatus being connected in the tubular string.
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92. The system according to Claim 71, wherein the flowpath is formed through a tube helically wrapped about a tubular mandrel, the mandrel being interconnected in a tubular string, so that a flow passage of the tubular string extends longitudinally through the mandrel.
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93. The system according to Claim 71, wherein the flowpath is formed through a tube formed so that the tube repeatedly alternates direction.

94. The system according to Claim 71, wherein the flowpath is formed
5 in a partitioned chamber of the apparatus.

95. The system according to Claim 94, wherein the chamber is rotatably disposed relative to a tubular mandrel.

10 96. The system according to Claim 94, wherein the apparatus is interconnected in a tubular string, and the chamber rotates relative to the tubular string in the well.

15 97. The system according to Claim 71, wherein the apparatus is interconnected in a tubular string, and wherein the tubular string rotates in the well relative to a connection between the line and the flowpath.

20 98. The system according to Claim 97, wherein relative rotation between the tubular string and the connection maintains a relative vertical orientation between the connection and the chamber.